

Clinicopathological spectrum of hysterectomy specimens in a tertiary care hospital- A review of 826 cases

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Introduction: Hysterectomy is one of the most common surgeries performed for common gynaecological indications, but less frequently done for tumors of female genital tract. Abnormal uterine bleeding (AUB) is one of the most common indications for hysterectomy. Histopathology is essential to confirm these common causes, but also helps to identify rare causes and to rule out malignancy. **Material and Methods:** The present study is a retrospective study done at Trichy SRM medical college hospital with hysterectomies done between January 2018 to November 2019 been included in the study. Clinical and Histopathological details were recorded, analysed and compared. **Results:** Of the 826 cases, Total abdominal hysterectomy was the most common surgery. The age varied from 21 to 85 with fourth decade as the most common age. Fibroid uterus and AUB were the most common clinical indication. Histopathology revealed leiomyoma as the most common diagnosis. About 95.5% cases correlated with clinical diagnosis. Of the 258 AUB cases, 100 had pure endometrial pathology and 31 cases showed combined endometrial and other pathologies. **Conclusion:** Histopathological evaluation is essential to substantiate the clinical findings, identify missed pathologies, establishing a definitive etiology thereby aiding effective treatment of the pathology.

Keywords: Hysterectomy, AUB, Endometrial Hyperplasia, Leiomyoma

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Introduction

Hysterectomy is one of the most commonly performed surgeries in the world [1]. Indications for hysterectomies include common conditions like Abnormal uterine bleeding, fibroid, adenomyosis, endometrial

Lesions and less frequently tumors of female genital tract [2,3]. Types of hysterectomies done include subtotal hysterectomy, total abdominal hysterectomy with or without salphingoopherectomy, vaginal hysterectomy and laparoscopic method [4]. This study aims at identifying the distribution of the age,

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Clinical indications, various histopathological diagnosis and clinicopathological correlation of hysterectomy specimens. The diagnostic importance of histopathological evaluation of hysterectomy is well explained in patients of female genital tract cancers where adjuvant treatment is dependent on the grade, determination of targeted therapy and extent of invasion [5].

Histopathological examination of hysterectomy specimens, irrespective of clinical diagnosis is essential to study the associations between multiple lesions in female genital tract, to identify newer etiologies for the diseases and to study the effects of hormones in various parts of the female genital tract with its potential consequences. Abnormal uterine bleeding is one of the most important indication for hysterectomy [6].

Though leiomyoma and adenomyosis are frequent causes of AUB and can be diagnosed by ultrasonography, histopathology is essential to confirm these common benign causes and further helps to identify rare causes, hidden pathologies and to rule out malignancy in AUB [7,8].

Dysfunctional uterine bleeding is a diagnosis of exclusion, where extensive histopathological examination of the female genital tract is essential to confirm the absence of organic cause for AUB. A variety of conditions also require the removal of uterus with no gross or microscopic pathology even after detailed examination, which includes treatment of ovarian, fallopian tube and vaginal malignancy, Pelvic inflammatory disease, endometriosis, pelvic pain and pelvic tuberculosis [9].

This study aims to analyse in detail about the distribution and causes of AUB. The study also aims at identifying various histopathological patterns of endometrial, myometrial, cervical and ovarian lesions in cases presented as AUB.

Material and Methods

Setting: Department of pathology, Trichy SRM Medical College Hospital and Research Centre

Duration: January 2018 to November 2019

Type of study: Retrospective study

Sampling Size calculation: Based on previous studies and statistical formula, sample size was determined with alpha error of 0.05 and power of 0.95

Sample size: 826

Inclusion criteria: All hysterectomy specimens received at the time of study period was included in the study.

Exclusion criteria: Hysterectomies with no adequate clinical data, hysterectomies done for trauma, hysterectomies done for systemic causes of bleeding.

Data collection procedure: Clinical data was recorded retrospectively. Microscopy was performed and histopathological details were recorded, analysed and compared with the clinical data.

Data analysis: Categorical variables was expressed as frequencies and percentages. Student T test was applied for calculating statistical significance when data followed nominal distribution. Mann whitney test applied when data followed non nominal distribution. Nominal categorical data between the group was compared using Chi-square test or fisher's exact test as appropriate. P<0.05 was taken to indicate a statistical significant difference.

Results

Total 826 cases of hysterectomy specimens were received during the study period. Of the 826 hysterectomies, total abdominal hysterectomy with bilateral salphingoophorectomy was the most common surgery done with 379 cases. Table 1 represented the summary of types of hysterectomy done in the study.

Table-1: Types of hysterectomy done in the present study.

Types of hysterectomy	No of cases	Percentage
Total abdominal hysterectomy with bilateral salphingoophorectomy	379	45.9
Total abdominal hysterectomy	312	37.8
Total abdominal hysterectomy with unilateral salphingoophorectomy	61	7.3
Vaginal hysterectomy	50	6.1
Radical hysterectomy	24	2.9
Subtotal hysterectomy	0	0

The age range varied from 21 to 85.

Fourth decade was the most common age group undergoing hysterectomy.

Table 2 represented the age distribution of hysterectomy in the present study.

Table-2: Age distribution of hysterectomy.

Age group	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80 or more
No of patients	0	8	120	455	157	64	18	4
percentage	0%	1%	14.5%	55.1%	19%	7.7%	2.2%	0.5%

Fibroid uterus and AUB were the most common clinical indication for hysterectomy. Table 3 showed the summary of clinical indications for hysterectomy.

Table-3: Clinical indications for hysterectomy.

Clinical diagnosis	No of patients	Percentage
AUB	258	31.3
Fibroid	226	27.5
Prolapse	147	17.9
Adenomyosis	102	12.5
Adnexal mass	53	6.5
Polyp cervix	13	1.7
Cervix mass	9	1.2
Pelvic inflammatory disease	6	0.7
Endometriosis	6	0.7
Hirsutism with adnexal mass	2	0.2
Post partum hemorrhage	1	0.1
Vaginal cyst	1	0.1
Leucoplakia	1	0.1
Dysuria with abdominal distension	1	0.1

In histopathological diagnosis, leiomyoma was the most common diagnosis, followed by adenomyosis and degenerative changes consistent with prolapse.

Table 4 summarises the major histopathological findings (includes multiple diagnosis) of all hysterectomy specimens.

When correlation between clinical and histopathological diagnosis was made, 781 out of 826 cases correlated with clinical diagnosis (95.5%). 45 cases did not show correlation with clinical diagnosis.

Most of the noncorrelating cases were microscopically adenomyosis, which clinically was diagnosed as leiomyoma or vice versa. Of the 258 cases presented as AUB, 100 cases had pure endometrial pathology and 31 cases showed combined endometrial with either myometrial or cervical pathology.

Table 5 shows breakdown of histopathology observed in AUB cases. In cases presented as AUB, the Summary of histopathological findings in cervix and vagina, endometrium, myometrium, ovary are shown in the Table 6, 7, 8 and 9 respectively.

Table-4: Summary of histopathological findings for all hysterectomy specimens

Histopathological finding	No of cases with finding	Percentage
Leiomyoma	307	37.5
Adenomyosis	201	25.3
Prolapse	147	17.8
Endometrial Hyperplasia	76	9.2
Benign ovarian cyst (including benign cystic neoplasm)	47	5.7
Disordered proliferative endometrium	40	4.8
CIN	27	3.4
Benign cervical polyp lesions	23	2.9
Ovarian epithelial malignancy	20	2.4
Ovarian stromal tumors	14	1.7
Endometriosis	15	1.8
Endometritis	12	1.4
Endometrial carcinoma (including stromal tumor)	12	1.4
Salpingoophoritis	10	1.2
Carcinoma cervix	8	1.0
Ovarian germ cell tumors	5	0.6
Other malignant tumors (including malignant Mullerian tumor, leiomyosarcoma, vaginal dermoid)	5	0.6
Others	4	0.5

Table-5: Summary of histopathology observed in AUB

Histopathology Observed	20-29	30-39	40-49	50-59	60-69	70-79	Total	Percentage
Endometrial	0	10	61	26	2	1	100	38.8
Adenomyosis+ endometrial	0	0	15	0	1	0	16	6.2
Leiomyoma+ endometrial	0	0	11	2	0	0	13	5.0
Cervix+ endometrial	0	2	0	0	0	0	2	0.7
Cervix	0	3	15	3	0	0	21	8.1
Ovary	0	0	6	4	0	0	10	3.9
Leiomyoma	0	0	27	0	0	0	27	10.5
Adenomyosis	3	6	18	7	0	0	34	13.2
Adenomyosis+ Leiomyoma	0	1	9	2	0	0	12	4.7
Vaginal	0	0	1	0	0	0	1	0.4
Leiomyosarcoma	0	0	2	0	0	0	2	0.8
No pathology identified	0	0	20	0	0	0	20	7.7
Total	3	22	185	44	3	1	258	
Percentage	1.2%	8.5%	71.7%	17.1%	1.2%	0.3%		100

Table-6: Summary of AUB cases with histopathological findings in cervix and vagina

Histopathological finding in cervix and vagina	No of cases	Percentage of AUB cases with the lesion
Benign polyps of cervix (including cervical leiomyoma)	13	5.0
CIN	2	0.7
Carcinoma cervix	8	3.1
Vaginal teratoma	1	0.4

Table-7: Summary of AUB cases with histopathological findings in endometrium

Histopathological finding in endometrium	No of cases	Percentage of AUB cases with the lesion
Endometrial hyperplasia	65	25.2
Disordered proliferative endometrium	40	15.5
Cystic atrophic endometrium	7	2.7
Endometrial carcinoma (including stromal tumor)	10	3.9
Endometritis	5	1.9
Hormone induced changes	2	0.8
Malignant Mullerian tumor	2	0.8

Table-8: Summary of AUB cases with histopathological findings in myometrium

Histopathological finding in myometrium	No of cases	Percentage of AUB cases with the lesion
Adenomyosis	62	24
Leiomyoma	52	20.2
Leiomyosarcoma	2	0.8

Table-9: Summary of AUB cases with histopathological findings in ovary

Histopathological finding in ovary	No of cases	Percentage of AUB cases with the lesion
Benign ovarian cystic lesions	2	0.8
Ovarian epithelial malignancy	1	0.4
Ovarian stromal tumor	6	2.3
Ovarian germ cell tumor	1	0.4

Table-10: Types of endometrial hyperplasia observed in the present study

	20-29	30-39	40-49	50-59	60-69	70-79	Total
Simple hyperplasia without atypia	0	6	31	13	0	0	50
Simple hyperplasia with atypia	0	0	2	0	0	0	2
Complex hyperplasia with atypia	0	2	4	3	0	0	9
Cystoglandular hyperplasia	0	0	1	9	3	2	15
Total	0	8	38	25	3	2	76

Of the 100 pure endometrial causes of AUB, 50 cases were endometrial hyperplasia, 28 were disordered proliferative endometrium, 10 endometrial carcinoma, 5 cystic atrophy, 5 were endometritis, one malignant mullerian tumor and one hormone induced changes. 15 cases of AUB had endometrial hyperplasia either combined with myometrial or cervical lesions.

Table 10 showed the types of endometrial hyperplasia (76) observed in the study that presented with AUB (65) and without AUB (11).

Discussion

Hysterectomy is one of the most commonly performed surgeries in the world usually done for the management of fibroid, Abnormal uterine bleeding, adenomyosis, prolapse and neoplastic lesions of the female genital tract [2,14]. Charles Clay performed the first subtotal hysterectomy in 1843 and the first total hysterectomy was done in 1929 in England [1,10]. Hysterectomies account for about 6% of all surgeries done in india [11]. Abdominal route is favourable in large fibroids, bulky uterus, suspected malignancy and emergencies for obstetric emergencies. Vaginal route commonly done in prolapse uterus and uterus weighing less than 280grams [12]. In the present study, a total of 826 hysterectomy cases were studied and total abdominal hysterectomy with bilateral salphingoopherectomy was the most common surgery done which is comparable with the previous study done by Subrata et al (77.26%), Gousia Rahim et al (67.19%), Kishwar et al (75%), Gangadharan et al(72%) and Bharati et al (76.75%) [13- 16]. Toma et al, PL leung et al reported 78%, 71% abdominal hysterectomies in their studies respectively [17,18]. Sujeet Kumar et al reported vaginal hysterectomy as the most common type of hysterectomy done [19].

The most common age group for hysterectomy in the present study was 40 to 49 yrs. This is comparable to the previous study by Subrata e al (45.78%), Gousia Rahim et al (47.27%), Gupta et al (51.40%), Kishwar et al (45%), Gangadharan et al and Bharati et al (41%) [5,9,10,13-15]. Mean age for hysterectomy was 46.3 in a previous study by Jha R et al which is similar to the present study [20].

In the present study, AUB and fibroid uterus were the most common clinical indication for hysterectomy followed by prolapse uterus. Previous

Study done by Priyadarshini et al, Shergill SK et al, Subrata et al, Gousia Rahim et al, Sajitha et al, Gupta et al, Kishwar et al and Gangadharan et al all showed fibroid uterus, AUB and prolapse as the most common indication for hysterectomy [5,10,13,14,15,21,22].

The histopathological study of the specimens in the present study revealed leiomyoma as the most common single histopathological finding observed in 310 cases. 37.5% hysterectomy cases had leiomyoma either as a predominant pathology or as an additional finding to another pathology. 25.3% cases had adenomyosis. Previous studies reported similar findings i.e., leiomyoma and adenomyosis as the most common histopathological finding in their studies [5,10,13,15,16,19]. Khriesat et al reported adenomyosis as the most common finding in hysterectomy specimens with 37%. Sajjad M et al reported 39% leiomyoma, 19% adenomyosis and 5% dual pathologies [24,25].

Endometrial hyperplasia was seen in 9.2% of all hysterectomy cases which is comparable with Subrata et al (8.95%). 50% of cases of endometrial hyperplasia were in the age group 40-49 which is comparable to Sajitha et al [23]. The early identification of endometrial hyperplasia is important to prevent transformation to endometrial carcinoma which is found to be around 5-10% [26]. High percentage of endometrial hyperplasia in the age group may be due to obesity, diabetes and sedentary lifestyle [27].

Incidence of malignancy in the hysterectomy specimens in this study was 7.75% which was comparable to Subrata et al (7.68%) and Gupta et al (4%) [10,13].

Overall incidence of endometrial carcinoma in hysterectomy specimens was found to be 1.21% which is similar comparable to Subrata et al. Overall incidence of ovarian tumors in hysterectomy specimens is 10.4% and benign tumors constituted 66.3% in the present study compared to Subrata et al which reported 8.42% tumors with 63.5% benign tumors [13].

Correlation of clinical diagnosis with the histopathologic diagnosis in the present study showed 94.5% correlation, that was comparable to study by Lee et al (80%), Gupta et al and Gangadharan et al (95%) [10,15,28]. The high degree of correlation may be due to extensive preoperative clinical and radiological evaluation in the tertiary care hospital.

AUB is defined as menstrual bleeding with abnormal amount, frequency, duration or cyclicity of bleeding presenting as menorrhagia, polymenorrhoea and intermenstrual bleeding [6,29]. Routine non-invasive investigations for AUB include Complete blood count, platelet count, PT, APTT and LFT. In reproductive age group blood and urine beta HCG levels should be evaluated to rule out pregnancy related bleeding. Endocrine causes are ruled out by doing thyroid function test, FSH level, LH and prolactin. Blood investigations are followed by transvaginal ultrasonography with endometrial sampling and histopathological evaluation [30]. When organic lesion could not be identified as the cause of AUB, then Dysfunctional uterine bleeding is considered as the diagnosis [27]. In the present study, AUB was prevalent in age ranging from 20 to 79. 40-49 years (69.7%) was the most common age group presented with AUB. Sajitha et al reported prevalence in age ranging from 23 to 78; 45 to 55 was the most common age group (42.95%) [23]. Mitali et al also reported 40-45 age group as the most common age for AUB [29]. Most common age for AUB correlated with many other previous studies [19,27,31]. AUB is common in the perimenopausal age, [27,32,33,34] WHO defines perimenopausal age group as the period between 2 to 8 years preceding menopause and one year after the last menses [35]. In the present study no organic lesions were identified in 20 AUB cases (7.7%) and these cases were designated as Dysfunctional uterine bleeding.

Most common histopathology in AUB patients was due to endometrial pathology followed by adenomyosis and leiomyoma in the present study. Study by Sujeet et al showed leiomyoma, DUB and adenomyosis as the common cause for AUB [19]. Doraisamy Saraswathi et al reported DUB, disordered proliferative endometrium as the most common histopathological abnormality in AUB [27]. Endometrial hyperplasia was seen in 25.2% (65 out of 258) cases of AUB in the present study. Sajitha et al reported 25% endometrial hyperplasia in AUB [23]. Mitali et al reported 12% in AUB [29]. Maximum age group for endometrial hyperplasia was 46-55 in a study by Sajitha et al, which is comparable to the present study [23]. Hyperplasia without atypia is considered benign and will usually regress with conservative management. But hyperplasia with atypia has 60% chances of coexisting with endometrial carcinoma or it may develop into endometrial carcinoma in a span of few years.

So hysterectomy is the treatment of choice in these patients [36]. In the present study hyperplasia without atypia are subjected to hysterectomy due to failure of conservative treatment. In simple hyperplasia the gland stromal ratio is maintained, where as in complex hyperplasia gland stromal ratio is increased [37]. 15.5% showed disordered proliferative endometrium in AUB in the present study, which is comparable to study by Doraisamy Saraswathi et al(20.5%) and Sajitha et al(12.2%) [23,27] 24.03% of AUB cases showed adenomyosis which is similar comparable to sujeet et al [19]. Disordered proliferative endometrium is due to prolonged periods of anovulatory cycles leading to prolonged estrogen exposure in perimenopausal women. Histopathological appearance of endometrial hyperplasia and disordered proliferative endometrium are similar and a continuum exists between the both, but the distinction is poorly reproducible. However the management of both conditions are the same with progesterone drugs. Histopathologically endometrium with many dilated glands that fulfills the microscopic criteria of endometrial hyperplasia are considered as endometrial hyperplasia, whereas disordered endometrium has very less number of cystically dilated glands [37]. Pattern of endometrial causes of AUB was statistically significant with p value < 0.05. As a woman reaches menopause, cycles shorten and often becomes intermittently anovulatory due to the decline in the ovarian follicles and in estradiol levels leading to various patterns of AUB [38].

In the present study, 11.6% AUB patients had malignancy and endometrial carcinoma comprised of 3.9% cases compared to study by Sajitha et al which showed 6.4% malignancy and 4.5% endometrial carcinoma [23].

Limitations of the study: Advanced cases of malignancy which are inoperable, yet had significant gynaecological symptoms could not be assessed as possible causes of AUB. Cases of AUB which were effectively managed by medical treatment and cases of AUB where preserving the uterus was a prime importance for preserving fertility could not be studied as the cause of AUB.

Conclusion

Hysterectomy is done for a large variety of gynaecological conditions. The importance of histopathological evaluation is the ability to

Substantiate the clinical findings and also to identify associated or missed pathologies, particularly malignancies thereby establishing a definitive etiology responsible for the clinical presentation and subsequently helping in the management of the condition.

What the study adds to the existing knowledge?

The present study identified high incidence of hysterectomy done for AUB, with histopathology revealing more than 50% of the AUB cases with endometrial pathology. Present study also showed higher incidence of endometrial hyperplasia and disordered proliferative endometrium. This increasing trend of endometrial pathology in AUB thereby leading to increase in hysterectomy procedures has to be evaluated in future studies with more sample size and additional relevant data.

Contribution

Dr. Ronald J Bosco and **Dr. Sarada**, Professor contributed in documentation of the microscopic findings, review of literature and discussion of the present study. The authors read and signed the final paper.

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